



Standard Practice for Installation of Underground Circular Precast Concrete Manhole Structures¹

This standard is issued under the fixed designation C1821/C1821M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the procedures to be followed in the planning, site preparation, installation, testing and backfilling of underground vertical reinforced circular precast concrete manholes and components manufactured in accordance with Specification C478 (C478M) and used in sewer, drainage, and water works.

1.2 Concrete pipe and box culverts are not covered under this practice. Also, precast concrete utility structures covered in Specification C858 are excluded from this practice.

1.3 *Units*—The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- C443 Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
- C443M Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric)
- C478 Specification for Circular Precast Reinforced Concrete Manhole Sections
- C478M Specification for Circular Precast Reinforced Concrete Manhole Sections (Metric)

¹ This test method is under the jurisdiction of ASTM Committee C13 on Concrete Pipe and is the direct responsibility of Subcommittee C13.06 on Manholes and Specials.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- C822 Terminology Relating to Concrete Pipe and Related Products
- C858 Specification for Underground Precast Concrete Utility Structures
- C881/C881M Specification for Epoxy-Resin-Base Bonding Systems for Concrete
- C923 Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
- C923M Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals (Metric)
- C928/C928M Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs
- C969 Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines
- C969M Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines (Metric)
- C990 Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
- C990M Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants (Metric)
- C1107/C1107M Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
- C1244 Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill
- C1244M Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill (Metric)
- C1478 Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes, and Laterals
- C1478M Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes, and Laterals (Metric)
- D2487 Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- D2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)